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I hereby declare that the work in this thesis is my own except for quotations and summaries in which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree.

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ABSTRACT

Cost and pollution with petrol and diesel are leading vehicle manufacturers to develop vehicles fueled by alternative energies. Engineers are directing their efforts to make use of air as an energy source to run the light utility vehicles. Compressed air as a source of energy in different uses in general and as a non-polluting fuel in compressed air vehicles has attracted scientists and engineers for centuries. Efforts are being made by many developers and manufacturers to master the compressed air vehicle technology in all respects for its earliest use by the mankind. The objectives of this project are to develop three wheel vehicle structure and to create a circuit data collection. Because this compressed powered car just need to refill the air in the tank compressed. This powered air car is function when the air is compressed inside the specific engine and generates the power within it. The challenge is to improve the distance can move and make more compact.

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LIST OF ABBREVIATION

CAE	Compressed air engine
CAT	Compressed air technology
CAV	Compressed air vehicles
CATS	Compressed Air Technology System
ZEV	Zero Emission Vehicle
MDI	Moteur Developement International
IDE	Integrated Development Environment
LCD	liquid-crystal display
Km	Kilometer's
Km/h	Kilometer's per-hour

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

A few researches have been made throughout the internet then one of this article about The Compressed Powered Car getting to know more about it.

Compared to batteries, compressed air is favorable because of a high energy density, low toxicity, fast filling at low cost and long service life. These issues make it technically challenging to design air engines for all kind of compressed air driven vehicles. To meet the growing demand of public transportation, sustainable with environmental consciousness, people are in the search for the ultimate clean car with zero-emissions. Many concept vehicles were proposed that run on everything from solar power to algae, but most of them are expensive and require hard-to-find fuels.

Thus this compressed powered car is collaboration with my friend from manufacturing student and electrical technology student. What the most interesting is, all the knowledge about technology was not being obtain through a formal learning, besides just get to know and learn through the internet and YouTube. This the compressed powered car are divided to two major specialization which manufacturing for engine and body of the car, electrical for speed sensor, pressure sensor, signal, Led screen and dynamo to generate the power supply. They are have four parts, engine, body of the vehicle, speed sensor and pressure sensor and Arduino (collecting data) and the last one is signal lighting. Our supervisor have guide and give the explanation about this project to make it clear and running smoothly.

World's most of the known energy demand fulfilling Fossil fuels such as petroleum, diesel, natural gas and coal are being depleted rapidly and need an another option to save them from completely finished. Also, combustion products after using them plays an major role in causing global problems, such as the greenhouse effect, ozone layer depletion, acid rains and pollution which are great danger for environment and eventually for the total life on planet and also has the strength to completely destroy the planet at later of its stage so it Is necessary to control it on its Initial stage.

One possible alternative is the Air-Powered Car. Air, which is abundantly available and is free from pollution, can be compressed to higher pressures at a very low cost, is one of the prime option. The first compressed air vehicle was established in France by a Polish engineer Louis Mekarski in 1870. It was patented in 1872 and 1873 and was tested in Paris in 1876. The working principle of Mekarski's engine was the use of energy stored in compressed air to increase gas enthalpy of hot water when it is passed through hot water. Another application of the compressed air to drive vehicles comes from Uruguay in 1984, where Armando Regusci has been involved in constructing these machines. He constructed a four-wheeler with pneumatic engine which travelled 100 km on a single tank in 1992. The Air Car was developed by Luxembourg-based MDI Group founder and former Formula One engineer Guy Negre is which works on compressed air engine (CAE). He developed compressed air- 4- cylinders engine run on air and gasoline in 1998 which he claims to be zero pollution cars. It uses compressed air to push its pistons when running at speeds under 35 mph and at higher speeds of 96 mph, the compressed air was heated by a fuel (bio fuel, gasoline, or diesel), due to which the air expanded before entering the engine. A fuel efficiency of about 100 mpg was observed run on the same 9.6 mile course, and the miles per gallon are calculated by weighing the gas tank before and after the run. Points awarded for a design report are combined with the miles per gallon rating to finalize the total points to determine rank. This is the third year that NIU will be participating in this competition. Last year we achieved a fuel mileage of 1169 mpg, which landed the team in 1st place in the United States and 3rd place internationally out of the 24 teams that passed tech inspection.

The mechanical design of the motor is simple and robust. The tanks used in an air compressed motor can be discarded or recycled with less contamination than batteries. The tanks used in a compressed air motor have a longer lifespan in comparison with batteries, which, after a while suffer from a reduction in performance. Refueling can be done at home using an air compressor or at service stations. Reduced vehicle weight is the principle efficiency factor of compressed air car. The rate of self-discharge is very low opposed to batteries that deplete their charge slowly over time.

1.2 BACKGROUND

This engine was developed between the end of 2001 and the beginning of 2002. It uses an innovative system to control the movement of the 2nd generation pistons and one single crankshaft. The pistons work in two stages - one motor stage and one intermediate stage of compression/expansion. The engine has 4 two-stage pistons, i.e. 8 compression and/or expansion chambers. They have two functions: to compress ambient air and refill the storage tanks; and to make successive expansions (reheating air with ambient thermal energy) thereby approaching isothermal expansion.

The motor which is operated by air was first applied to the field of transportation in the mid-19th century. The first successful application of the pneumatic motor in transportation was the Mekarski system which is used in locomotives. Mekarski engines were first used by Tramway de Nantes in December 13, 1879 to power their fleet of locomotives. It is located in Nantes, France. Robert Hardie had introduced a new method of heating which increases the range of the engine which helped to increase in distance in 1892. Charles B Hodges, will also be remembered as a true father of compressed air concept because he didn't invent only cars which run by compressed air but also have a considerable commercial success with it. After the hard work of twelve years of researches and developments French engineer by profession Guy Negre, has also designed low consumption and low pollution engine for urban motoring that runs on compressed air technology (CAT). In year 2008, India largest car manufacturer company TATA was also announced that it would introduce world's first commercial vehicle that will run on compressed air.

As we know Fossil fuel which fills the energy production demand of the world is decreasing rapidly and also polluting our ecosystem due to which greenhouse effect, ozone layer depletion, acid rains and air pollution takes place. Energy crisis is due to two reasons, firstly due to population of the world has increased rapidly and secondly the standard of living of human being has increased. This can be reduce and controlled by using compressed air engine to produce energy, which runs on air which is abundantly available in atmosphere. A compressed air engine is a pneumatic actuator that creates useful work by expanding compressed air.

It is important to realize that the way we power our vehicles today is based on the legacy of energy discoveries of the 1800s. Oil was first taken out of the ground in

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